

**State of Wisconsin
Department of Natural Resources**

**Responses to Comments
Modeling Post-Construction Storm Water Management Treatment
Guidance #3800-2015-04**

May 2015

On January 26, 2015, the Wisconsin Department of Natural Resources (Department) issued a public notice on proposed “Modeling Post-Construction Storm Water Management Treatment” guidance. The Department received several comments on the proposed guidance. This document represents the Department’s response to the written comments on the guidance. To facilitate the responses, the Department may have paraphrased, rephrased, condensed, or consolidated comments. Thank you to all for taking the time to review and comment on the proposed guidance.

PUBLIC COMMENTS & DNR RESPONSES

Comments by Northeast Wisconsin Stormwater Consortium

Please consider the comments below developed by the members of the Northeast Wisconsin Stormwater Consortium when finalizing the proposed Modeling Post-Construction SWM Treatment Guidance.

1. Entire Document - Please consider replacing the word “basin” with the word “pond” such that terminology agrees with Wet Detention Pond - Technical Standard Code 1001. A “basin” is a hydrologic term used to identify a very large watershed, such as the Fox River Basin.

DNR Response: We have incorporated this suggestion.

2. Entire Document – Please consider clarifying that the guidance document applies to both NR 151 and Total Maximum Daily Load implementation for TSS and total phosphorus (TP). Please consider including TP procedures throughout the guidance document for purposes of post-construction TMDL implementation. For example:
 - a. Consider clarifying whether the TSS formulas and example calculations provided within the guidance document apply to both TSS and TP pollutants.
 - b. Similar to TSS, we assume the infiltration volume associated with an infiltration basin, bioretention device, grass swale, and permeable pavement will provide a 100% TP reduction. We also assume the by-pass volume associated with these same devices will provide a 0% TP reduction. Similar to TSS, please clarify the percent TP reduction credit for the filtered volume associated with a bioretention device, grass swale, and permeable pavement.

DNR Response: We have added a paragraph within section A in the final guidance to identify that this guidance is also applicable to modeling MS4s with respect to the development urban area standard of s. NR 151.13 and TMDL implementation.

3. Section B, Item 6 (page 4) – Please consider maintaining the “extra year” before the keep dates and eliminating the option for just a “month”. A “month” may not always be sufficient. As a plan reviewer, a consistent duration will reduce potential confusion.

DNR Response: We have incorporated this suggestion.

4. Section B, Item 7 (page 4) – For clarity, Item 7 is a good addition to the guidance document.

DNR Response: Thank you! No change.

5. Section B, Item 8 (page 5) – Please consider modifying the second sentence as follows: “Control of TSS runoff that originates from a different landowner does not count toward meeting the post-construction site’s TSS performance standard. Control of TSS runoff that originates from the same landowner, but originates outside the post-construction site’s limits of disturbance, does count toward meeting the post-construction site’s TSS performance standard.” An example calculation is provided as follows:

- a. Jessica plans to redevelop 8 acres of her existing 40 acre commercial property. Jessica’s post-construction site is 8 acres in size. Based on the TMDL, a 65% TSS reduction is required for her 8 acre post-construction site.

Jessica plans to construct a wet detention pond within her 8 acre post-construction site. The pond watershed is 20 acre in size. Of the 20 acre pond watershed, 7 acres are located on Brent’s adjacent property, 10 acres are located within Jessica’s 40 acre property but outside her 8 acre post-construction site, and 3 acres are located within both Jessica’s 40 acre property and her 8 acre post-construction site.

Jessica’s 40 acre commercial property and Brent’s 7 acre commercial property both have a no controls TSS loading rate of 500 lbs/acre. The TSS calculations are as follows:

- i. No Controls TSS Load for Post-Const. Site = 8 acres x 500 lbs/acre = 4,000 lbs
- ii. TSS Reduction Goal for Post-Const. Site = 4,000 lbs x 65% = 2,000 lbs
- iii. TSS Reduction Provided by Pond = 20 acres x 500 lbs/acre x 80% = 8,000 lbs
- iv. TSS Reduction Credit Provided to Jessica:
 1. Within Post-Const. Site = 3 acres x 500 lbs/acre x 80% = 1,200 lbs
 2. Outside Post-Const Site = 10 acres x 500 lbs/acre x 80% = 4,000 lbs
 3. Total = 1,200 lbs + 4,000 lbs = 5,200 lbs removed by pond

In this example, Jessica achieves a 5,200 lb TSS reduction, which achieves the 2,000 lb TSS reduction goal for her 8 acre post-construction site. Jessica will reserve the extra 3,200 lb TSS reduction (5,200 minus 2,000) for future post-construction projects within her 40 acre property. Jessica cannot take credit for the 2,800 lb TSS reduction provided by her wet pond for Brent’s 7 acres of off-site property (7 acres x 500 lbs/acre x 80%).

Five years later, Brent decides to redevelop his 7 acres of property that drains into Jessica's wet pond. Brent may not take post-construction credit for the 2,800 lb TSS reduction provided by Jessica's wet pond without first obtaining an owner approval letter from Jessica. Jessica will likely charge Brent for a portion of wet pond costs before issuing an owner approval letter for Brent. As part of the post-construction permit process, both the Wisconsin DNR and the local municipality will require Brent to either install a separate BMP for his 7 acre post-construction site or obtain an owner approval letter from Jessica for the wet pond before issuing a permit to Brent.

DNR Response: We have incorporated this suggestion.

6. Section B, Item 14 (page 6) – Please consider modifying the second sentence as follows: “However, it is recommended that peak flows not be increased at each site outfall. The purpose of 1 and 2-year peak flow control is to reduce the potential for off-site stream and river erosion. The site's outfalls may discharge to different stream segments or different municipal systems.”

DNR Response: We have incorporated this suggestion.

7. Section B, Item 21 (page 7) – Please consider being consistent between the infiltration and the peak flow sections by placing this paragraph into “Peak Flow” section as well. Also, please consider clarifying if the use of composite CNs is acceptable for peak flow calculation. The second paragraph is vaguer than the first paragraph.

DNR Response: We have added this infiltration section under peak flow as well and also clarified how to determine if composite CNs are acceptable.

8. Section B, Item 28 (page 8) – Please identify the % TP removal credit for the volume of runoff that is filtered through an engineered (soil) filtering layer and that is discharged via an underdrain. TMDL implementation for TSS and TP pollutants is beginning in some municipalities.

DNR Response: DNR's current engineered soil mixture with 15 – 30% compost has not shown a TP reduction in runoff that is filtered. Therefore, the final guidance gives no credit for TP reduction through engineered soil. USGS and DNR are working to try to develop an engineered soil mixture that will reduce TP in filtered runoff.

9. Section B, Item 29 (page 8) – The porous pavement section in the guidance document was deleted. Please identify the % TP removal credit for the volume of runoff that is filtered through the porous pavement surface. TMDL implementation for TSS and TP pollutants is beginning in some municipalities.

DNR Response: DNR Permeable Pavement Technical Standard 1008 was published in December 2014 and it addresses some of the issues previously contained in the porous pavement section. A portion of the porous pavement section was restored in the final guidance and it also identifies that a 35% TP reduction applies to runoff that discharges out the underdrain.

10. Section B, Item 30 (page 8) – Please identify the % TP removal credit for the volume of runoff that is filtered through the green roof. TMDL implementation for TSS and TP pollutants is beginning in some municipalities.

DNR Response: Rooftop runoff generally contains a relatively low level of TSS and TP. A green roof may lead to an increased discharge of nutrients from leaching of nutrients in the soil or fertilizer application. Therefore, the final guidance has identified that no credit should be given for TSS or TP reduction of runoff filtered through a green roof.

Comment by Nick Vande Hey (McMahon Associates)

11. Section B, New Item – I anticipate that designers will likely use pure sand filters (or stone filters) in order to show compliance with phosphorus performance standards. The permeable pavement Technical Standard implies that a sand or stone layer provides a 35% TP reduction if a 50% TSS reduction is achieved. As such, if WinSLAMM indicates a sand or stone layer provides an 80% TSS reduction, is it reasonable for a designer to assume that the sand or stone layer also provides a 55% or 60% TP reduction? In my opinion, the final post-construction guidance should establish a % TP reduction for different filter media (i.e. sand, stone, engineered soil), which will assist with phosphorus TMDL implementation and meaningful TP reductions. Landowners and municipalities are spending significant dollars on BMPs that are intended to reduce both phosphorus and sediment. In my opinion, the draft post-construction guidance rightfully states that biofilters, green roofs and probably rain gardens with underdrains / engineered soil filters do not reduce phosphorus. What about other filter medias?

DNR Response: DNR agrees that a pure sand filter will provide TSS and phosphorus control and has added a new section 32 (Sand Filter) to address this issue.

DNR is giving 55% TSS and 35% TP removal credit to runoff that drains through an underdrain from the stone storage area under the permeable pavement. This level of credit was selected as a conservative estimate from multiple monitoring sources. This level of treatment is not based solely on filtering through the permeable pavement but is suspected to largely come from settling in the rock storage area below the permeable pavement. Therefore, a stone filter by itself without a settling area would not be as efficient as a permeable pavement system or an engineered soil filtering layer.

AMENDMENT BY THE DEPARTMENT

The final guidance was approved on May 22, 2015.

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